

Abstract Submitted
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Higgs transitions of spin ice STEPHEN POWELL, University of Maryland, College Park — Spin ice is a frustrated magnetic material displaying a variety of interesting phenomena. At low temperature, it exhibits a “Coulomb phase”, in which there is no magnetic order and correlations have power-law forms at long distances. In this talk, I will describe the effects of applying perturbations that favor ordered states and show that the resulting phase transitions cannot be described by the standard Landau paradigm. They are instead naturally viewed as Higgs transitions of an emergent gauge theory; this perspective leads to long-wavelength theories for the critical properties. I will present specific examples of transitions described by this approach that result from perturbations such as an applied magnetic field or additional spin–spin interactions.

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